●1624 EFFECTS OF INTRARENAL ADMINISTRATION OF DOPAMINE (DA) ON RENAL BLOOD FLOW (RBF) IN CONSCIOUS FETAL AND ADULT SHEEP: RELATION TO IN VITRO DA RECEPTOR FINDINGS. Kenneth T. Nakamura, Robin A. Felder, Pedro A. Jose and Jean E. Robillard. Univ of Iowa, Dept Peds, Iowa City, IA, and Georgetown Univ Med Ctr, Dept Peds, Washington, D.C.

Effects of intrarenal boluses of DA (0.125 to 16 ug/kg of body wt.) on RBF were studied in chronically catheterized fetal (F) lambs (129-137 days; term 145 days) and adult (A) sheep. Changes in RBF were continuously monitored by doppler flowmeter. Effects of DA alone and during α and β adrenergic blockade were studied. Blood pressure was unchanged during DA infusion. DA alone in F produced no change in RBF (%ΔRBF) at doses <2 ug/kg; doses >2 ug/kg decreased RBF in a dose response relation (r=0.84). Decreased RBF in A was seen only at >8 ug/kg. F were less sensitive to DA than A when DA was corrected for RBF (ug/kg/ml RBF). Following adrenergic blockade (%ΔRBF-B), DA produced vasodilation in F and A; the DA dose required for vasodilation was 10 times greater in F than A.

DOSE	FETUS (n=8)			ADULT (n=6)		
ug/kg	ug/kg/ml RBF	%ΔRBF	%ΔRBF-B	ug/kg/ml RBF	%ΔRBF	%ΔRBF-B
2	0.08-0.10	-19±2*	+4±1	0.004-0.006	-4±2	+6±2
4	0.15-0.20	-43±7*	+1±1	0.007-0.012	-3±2	+3±3
8	0.30-0.40	-84±11*	+13±3*	0.014-0.024	-20±13*	+8±3*
16	---	---	+10±3*	0.028-0.048	-58±42*	+14±8*

*significantly different from baseline at p<0.05. Values are mean ± SEM. In vitro DA-receptor characterization was done using the opposite kidney removed at surgery. Similar DA receptor affinity between F (Kd 66.3±10.4 nM) and A (Kd 70.5±6.4 nM) as well as DA receptor density (1.08±0.13 and 0.90±0.22 pM/mg protein respectively) were found. Present results demonstrate that DA has less vasodilatory effect in F than A during adrenergic blockade but this effect is not secondary to a difference in receptor affinity or density, suggesting a post-receptor phenomenon.

●1625 EFFECTS OF 1,25(OH)$_2$D$_3$ (1,25D), 25-OHD$_3$ (25D) AND DIHYDROTACHYSTEROL (DHT) ON GROWTH VELOCITY (GV) AND QUALITATIVE BONE HISTOLOGY (BH) IN CHILDREN WITH CHRONIC RENAL FAILURE (CRF) AND RENAL OSTEODYSTROPHY (ROD). M.E. Norman, A.T. Mazur, M. Vaughan-Norton, R. Baron, C. Anast, Depts. Pediatrics, Children's Hosp. Phila. & Harvard Univ., Boston, and Dept. Med., Yale Univ., New Haven.

15 children with a mean age of 8 yrs (2.8-14.9) with CRF (mean GFR 34.8±4.6) and ROD have completed one (n=15) to two (n=9) yrs of 1,25D, 25D or DHT tx (n=5 each), and effects on GV, BH and calcium metabolism were evaluated. Pts were matched by sex, age, initial BH and GFR. GV was defined by standard deviation scores. Overall GV was -1.2±.4 pre-tx and increased to -.2±.3 (p<.025) after 1 year and -1.1±.3 after 2 yrs. Change in GV, analyzed by individual vit D tx was significant (p<.05) only in the DHT subgroup (-1.3±.6 to .1±.4). Pre-tx BH revealed predominant osteitis fibrosa (OF) in 9, predominant osteomalacia (OM) in 1 and both OF and OM in 5. BH normalized after 1 yr in 6; 1 received 1,25D; 3, 25D; and 2, DHT. After 2 yrs, 1 pt's BH reversed to OF while on DHT; 1 pt remained normal while on 1,25D. Improvement in GV was not associated with normalization of BH. iPTH declined overall and in each subgroup but not significantly. Serum Ca, Pi, alk. p'tase, cr and GFR were unchanged during tx. Hypercalcemia occurred in 2 pts receiving 1,25D and 1 receiving DHT; none experienced permanent reduction in GFR. We conclude that early tx of ROD with vit D is associated with significant increase in GV independent of qualitative changes in BH.

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1626 UNEXPLAINED HEMATURIA: HISTOLOGIC DIAGNOSIS IN 61 CHILDREN Carolyn F. Piel, Claude G. Biava, Joseph R. Goodman, University of California, San Francisco, Department of Pediatrics and Pathology, San Francisco, California.

Percutaneous renal biopsies were performed in 61 non-uremic children between 1963 and 1982 for unexplained hematuria. In 26 biopsies, only attenuation of the lamina densa of the glomerular capillary wall (BM) was found by electron microscopy (EM), a finding consistent with BM nephropathy. Of these 26 children, 16 had microscopic hematuria (MH) found on routine urinalysis and 10 had gross hematuria (GH) (7 associated with fever or physical exercise, 3 with no associated event). In 18 biopsies, findings diagnostic of IgA nephropathy were present. Of these 18 children, 12 had GH (5 with fever or phsyical activity and 7 without associated event). In the last group of 17 biopsies, no specific diagnostic findings were present, the biopsies being either normal (12 cases) or showing only mino non-specific glomerular alterations (5 cases). Of these 17 children, 10 had MH and 7 GH, all without associated event.

Conclusion: The renal biopsy is diagnostic in 72.1% of children with unexplained hematuria.

1627 POOR DIURETIC RESPONSE TO FUROSEMIDE (F) IN SMALL PREMATURE INFANTS (≤2000gm) WITH BIRTH ASPHYXIA. T.F. Yeh, D. Raval, A. Shibli, R.S. Pildes. Cook County Hosp. and Univ. of Ill., Dept. of Pediatr., Chicago, Ill.

To evaluate the role of asphyxia on the renal response to F, 35 prematures (≤2000gms) with Apgar score (1 min) of ≤3 were randomized into control (C) (19) and F (16) groups. Infants in F group were given 1 mg/kg IV of F shortly after birth (0-8hrs) and then q 24 hrs for a total of 3 doses. There was no sign. difference between the C and F groups in B.W. (mean±SD, 1218±412 vs 1187±306 gms), G.A. (31.2±2.9 vs 30.6±1.9 wks), incidence of RDS (14/16 vs 16/19), assist. vent. (11/16 vs 14/19) or in blood gases, pH and BP before the study.

	Post-Study (hrs)	U/O (ml/kg/h)	FE_{Na} (%)	FE_{Cl} (%)	FE_K (%)	GFR (ml/min/1.73m^2)
	0-12	1.4±0.9	2.1±1.2	2.0±1.6	42.2±16.2	4.5±1.9
C	12-24	1.9±1.1	3.1±1.9	1.7±1.7	44.4±14.8	6.9±4.5
(19)	24-48	2.0±1.1	4.4±2.9	3.0±2.7	45.6±26.5	6.3±3.6
	48-72	1.7±0.8	4.5±1.9	3.7±2.7	51.7±30.1	5.7±3.5
	0-12	1.3±0.5	3.9±2.6	5.1±2.9**	44.3±16.8	4.1±3.4
F	12-24	1.6±0.7	4.5±3.1	5.3±3.3**	54.4±23.4	4.8±3.3
(16)	24-48	1.8±1.3	6.1±4.8	4.5±3.4*	57.9±29.9	6.0±4.7
	48-72	2.2±1.0	8.3±5.1**	8.5±6.0**	49.0±21.3	7.0±4.6

This study indicates that F in prematures with birth asphyxia induces FE_{Cl} excretion within 0-12 hrs and natreuresis after the third day but does not induce diuresis or kaliuresis nor does it alter GFR. *p < 0.05 **p < 0.01 C vs F

1628 AUTONOMIC NERVOUS SYSTEM DYSFUNCTION(AD)IN CHILDREN WITH END STAGE RENAL DISEASE:COMPARISON OF HEMO-(HD) AND PERITONEAL(PD))DIALYSIS. Martin S.Polinsky, Bruce Z.Morgenstern, H.Jorge Baluarte, Bruce A. Kaiser, Sharon A.Perlman, Alan B.Gruskin. St.Christopher's Hospital for Children, Temple University School of Medicine, Philadelphia, PA.

Symptomatic hypotension complicated 53-87% of all treatments in 7 of our pediatric HD patients (HDP) despite modest ultrafiltration (<6% of estimated dry weight). The possible relationship of AD to this problem was evaluated in 12 dialysis patients (DP) aged 8.1-19.8 yrs, 5 of whom were receiving peritoneal dialysis(PDP),and in 7 controls (C) aged 8.0-16.5 yrs, using the heart rate (HR) response to the Valsalva Maneuver (VM) (straining to 40 mm Hg x 10 sec)and degree of beat-to-beat variability in the resting heart rate (BVHR). Studies were performed using a standard electrocardiograph; the Valsalva Ratio(VR)was calculated as the maximal RR interval following÷minimal RR interval during VM. BVHR was determined as the coefficient of variation(CV)of 150 successive RR intervals recorded during recumbency. All DP had normal cardiac function by echocardiography, and none had orthostatic hypotension. The mean VR for C (2.06±.23) was significantly higher than that for HDP(1.54±.19,p<.001),PDP (1.68±.18,p<.02),and the group as a whole (1.60±.19,p<.001). In most DP the abnormally low VR was due to a failure to develop adequate reflex bradycardia following the release of straining. The mean CV for C (.103±.034) was significantly higher than that for HDP (.042±.015,p<.001) but not PDP (.072±.015,p<.10). Moreover, the mean CV for HDP was significantly lower than that for PDP (p<.01). Mean hemoglobin concentrations were not significantly different in HDP (7.1±1.5 g/dl)vs. PDP(7.6±.94 g/dl,p>.40), nor were the observed disturbances attributable to differences in resting HR, supine mean arterial pressure,months on dialysis, or age. The data indicate that AD occurs commonly among pediatric DP. The observed pattern of disturbances is consistent with defective cardiac parasympathetic innervation, with HDP more severely affected than PDP. AD also may be 'unmasked' more readily in HDP, since the higher ultrafiltration rates associated with HD require more effective cardiovascular reflex compensation. AD should be considered as a possible cause of recurrent, symptomatic hypotension in pediatric DP.

1629 PRETERM OVINE CATECHOLAMINE RESPONSE TO UMBILICAL CORD CUTTING. D.H. Polk, J.F. Padbury, R.W. Lam, J.P. Newnham, D.A. Fisher. UCLA School of Medicine, Harbor-UCLA Medical Center, Dept. of Pediatrics, Torrance, CA.

Catecholamine (CAT) release has been observed in the near term ovine fetus in response to a number of provocative stimuli. Previously we reported the effects of intrauterine manipulation, fetal exteriorization, and umbilical cord cutting (UCC) on CAT and free fatty acid (FFA) levels in the blood of near term lambs. In the present study we repeat these measurements in premature (m G.A.=132 d, n=5) lambs. Following fetal arterial catheterization lambs were exteriorized and maintained with an intact umbilical circulation. Following UCC the animals were treated with intratracheal surfactant and placed on ventilators for support. This allowed us to maintain the animals with normal blood gases throughout the experiment. Results show that instrumentation and delivery evoked a brief elevation of fetal CAT levels which returned to baseline within 30 min. UCC was followed by a marked increase in epinephrine (E) and norepinephrine (NE) (mean peak plasma levels of 10,000 pg/ml and 3,700 pg/ml). These results were compared with data in near term lambs by two-way ANOVA; the preterm CAT peaks are higher and reached later in preterm animals (p<0.001). The FFA response of the preterm animals was blunted when compared with the response of the near term animals (p< 0.001). Conclusions: 1) UCC is an important stimulus for fetal CAT release in preterm as well as term animals. 2) The peak CAT levels in preterm animals are much higher and reached later after UCC than in term animals. Speculation: Augmented CAT release in the preterm animal is an important adaptive phenomenon.